

US-PAT-NO: 6399210
DOCUMENT-IDENTIFIER: US 6399210 B1

TITLE: Alkoxyhydridosiloxane resins

DATE-ISSUED: June 4, 2002

US-CL-CURRENT: 428/447; 427/245 ; 427/387 ; 521/154 ;
528/29 ; 528/31 ; 528/33

APPL-NO: 09/ 723051

DATE FILED: November 27, 2000

----- KWIC -----

Abstract Text - ABTX:

An alkoxyhydridosiloxane resin composition comprising
ROSiO.sub.3/2 siloxane
units and HSiO.sub.3/2 siloxane units wherein R is an alkyl
group having 10 to
28 carbon atoms, wherein the alkoxyhydridosiloxane resin
contains an average
from 5 to 40 mole percent silicon bonded alkoxy groups, and
wherein the
alkoxyhydridosiloxane resin contains an average of at least
45 mole percent
silicon bonded hydrogen atoms. While not represented by
the structure, the
resins may also contain a small number of atoms which have
either 0 or 2
hydrogen atoms attached thereto and/or a small number of
SiC groups such as
CH.sub.3 SiO.sub.3/2 or HCH.sub.3 SiO.sub.2/2 groups.
These resins are useful
for forming nanoporous silicone resin coatings having low
dielectric constant
coatings useful for electrical insulating coatings on
electronic devices.

US-PAT-NO: 6372337
DOCUMENT-IDENTIFIER: US 6372337 B1

TITLE: Thermally conductive grease composition and
semiconductor device using
the same

DATE-ISSUED: April 16, 2002

US-CL-CURRENT: 428/328; 252/512 ; 428/323 ; 428/332 ;
428/402 ; 428/403
; 438/584 ; 508/172 ; 524/441 ; 524/786

APPL-NO: 09/ 318736

DATE FILED: May 26, 1999

| FOREIGN-APPL-PRIORITY-DATA: | | |
|-----------------------------|-----------|-----------------|
| COUNTRY | APPL-NO | APPL-DATE |
| JP | 10-235731 | August 21, 1998 |

----- KWIC -----

Detailed Description Text - DETX:

It is desirable for the organopolysiloxane used in the present invention to be blocked with trimethylsilyl groups at the molecular-chain ends thereof. As R.sup.5, R.sup.6 and R.sup.7 each, an alkyl group such as methyl or ethyl, an aryl group such as phenyl or tolyl, or a group formed by substituting hydroxyl group(s) for a part of the hydrogen atoms of the group as recited above, particularly a methyl group, a phenyl group or an alkyl group having 6 to 14 carbon atoms, is preferable with respect to easiness of synthesis and thermal resistance and electric insulation of the oil obtained.

| | Type | L # | Hits | Search Text | DBs | Time Stamp |
|---|------|-----|--------|---|-------|---------------------|
| 1 | BRS | L1 | 352 | (electric\$5 near insulat\$5) same (alkyl) | USPAT | 2002/12/04 09:56 |
| 2 | BRS | L2 | 188343 | chromatogra\$4 | USPAT | 2002/12/04 09:39 |
| 3 | BRS | L3 | 54 | 1 and 2 | USPAT | 2002/12/04 09:54 |
| 4 | BRS | L4 | 74274 | 210/\$.ccls. | USPAT | 2002/12/04 09:55 |
| 5 | BRS | L5 | 0 | 3 and 4 | USPAT | 2002/12/04 09:55 |
| 6 | BRS | L6 | 0 | 1 and 5 | USPAT | 2002/12/04 09:55 |
| 7 | BRS | L7 | 179 | (electric\$5 near insulat\$5) with (alkyl) | USPAT | 2002/12/04 09:57 |

| | Comments | Error Definition | Errors |
|---|----------|------------------|--------|
| 1 | | | 0 |
| 2 | | | 0 |
| 3 | | | 0 |
| 4 | | | 0 |
| 5 | | | 0 |
| 6 | | | 0 |
| 7 | | | 0 |

| | Type | L # | Hits | Search Text | DBs | Time Stamp |
|---|------|-----|--------|---|-------|---------------------|
| 1 | BRS | L1 | 352 | (electric\$5 near insulat\$5) same (alkyl) | USPAT | 2002/12/04 09:56 |
| 2 | BRS | L2 | 188343 | chromatogra\$4 | USPAT | 2002/12/04 09:39 |
| 3 | BRS | L3 | 54 | 1 and 2 | USPAT | 2002/12/04 09:54 |
| 4 | BRS | L4 | 74274 | 210/\$.ccls. | USPAT | 2002/12/04 09:55 |
| 5 | BRS | L5 | 0 | 3 and 4 | USPAT | 2002/12/04 09:55 |
| 6 | BRS | L6 | 0 | 1 and 5 | USPAT | 2002/12/04 09:55 |
| 7 | BRS | L7 | 179 | (electric\$5 near insulat\$5) with (alkyl) | USPAT | 2002/12/04 09:57 |

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| 2 | | | 0 |
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| 6 | | | 0 |
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| L Number | Hits | Search Text | DB | Time stamp |
|-------------|--------|---|-------|---------------------|
| 1 | 352 | (electric\$5 near insulat\$5) same (alkyl) | USPAT | 2002/12/04 09:56 |
| 2 | 188343 | chromatogra\$4 | USPAT | 2002/12/04 09:39 |
| 3 | 54 | ((electric\$5 near insulat\$5) same (alkyl)) and chromatogra\$4 | USPAT | 2002/12/04 09:54 |
| 4 | 74274 | 210/\$.ccls. | USPAT | 2002/12/04 09:55 |
| 5 | 0 | ((electric\$5 near insulat\$5) same (alkyl)) and chromatogra\$4) and 210/\$.ccls. | USPAT | 2002/12/04 09:55 |
| 6 | 0 | ((electric\$5 near insulat\$5) same (alkyl)) and (((electric\$5 near insulat\$5) same (alkyl)) and chromatogra\$4) and 210/\$.ccls.) | USPAT | 2002/12/04 09:55 |
| 7 | 179 | (electric\$5 near insulat\$5) with (alkyl) | USPAT | 2002/12/04 09:57 |

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|----------|--------|--|-------|------------------|
| 1 | 352 | (electric\$5 near insulat\$5) same (alkyl) | USPAT | 2002/12/04 09:56 |
| 2 | 188343 | chromatogra\$4 | USPAT | 2002/12/04 09:39 |
| 3 | 54 | ((electric\$5 near insulat\$5) same (alkyl)) and chromatogra\$4 | USPAT | 2002/12/04 09:54 |
| 4 | 74274 | 210/\$.ccls. | USPAT | 2002/12/04 09:55 |
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| 6 | 0 | ((electric\$5 near insulat\$5) same (alkyl)) and (((electric\$5 near insulat\$5) same (alkyl)) and chromatogra\$4) and 210/\$.ccls.) | USPAT | 2002/12/04 09:55 |
| 7 | 179 | (electric\$5 near insulat\$5) with (alkyl) | USPAT | 2002/12/04 09:57 |

US-PAT-NO: 6184260
DOCUMENT-IDENTIFIER: US 6184260 B1

TITLE: Method for making nanoporous silicone resins from
alkylhydridosiloxane
resins

DATE-ISSUED: February 6, 2001

US-CL-CURRENT: 521/77; 521/154

APPL-NO: 09/ 596012

DATE FILED: June 16, 2000

PARENT-CASE:

This application is a divisional of U.S. patent
application Ser. No.
09/458,739 filed Dec. 13, 1999, pending.

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Abstract Text - ABTX:

A method for preparing a nanoporous silicone resin which
can be used to form
low dielectric constant films useful for electrical
insulating coatings on
electronic devices comprising (A) contacting a
hydridosilicon containing resin
with a 1-alkene comprising about 8 to 28 carbon atoms in
the presence of a
platinum group metal-containing hydrosilation catalyst
effecting formation of
an alkylhydridosiloxane resin where at least 5 percent of
silicon atoms are
substituted with at least one group comprising about 8 to
28 carbon atoms and
at least 45 percent of silicon atoms are substituted with
at least one hydrogen
atom and (B) heating the alkylhydridosiloxane resin of step
(A) at a

temperature sufficient to effect curing and thermolysis of alkyl groups comprising about 8 to 28 carbon atoms from the silicon atoms thereby forming a nanoporous silicone resin.

Brief Summary Text - BSTX:

The present invention is a method for preparing a nanoporous silicone resin which can be used to form low dielectric constant films useful for electrical insulating coatings on electronic devices. The method comprises (A) contacting a hydridosilicon containing resin with a 1-alkene comprising about 8 to 28 carbon atoms in the presence of a platinum group metal-containing hydrosilation catalyst effecting formation of an alkylhydridosiloxane resin where at least 5 percent of silicon atoms are substituted with at least one alkyl group comprising about 8 to 28 carbon atoms and at least 45 percent of silicon atoms are substituted with at least one hydrogen atom and (B) heating the alkylhydridosiloxane resin of step (A) at a temperature sufficient to effect thermolysis of alkyl groups comprising about 8 to 28 carbon atoms of the alkylhydridosiloxane thereby forming a nanoporous silicone resin.

Brief Summary Text - BSTX:

The silicone resins made by the present method are nanoporous. By the term "nanoporous" it is meant a silicone resin have a median pore diameter less than about 20 nm. A preferred embodiment of the present invention is an electronic substrate having a nanoporous coating of the silicone resin. In the preferred embodiment of the invention, the nanoporous silicone resin coating preferably has a median pore diameter within a range of about 0.3 nm

to 2 nm. Such
nanoporous silicone resins may also be made in particulate
form by standard
methods such as spray drying and heating as described above
to make nanoporous
and used in such applications as packing in chromatography
columns and other
such applications where porous materials are used.

US-PAT-NO: 5294426

DOCUMENT-IDENTIFIER: US 5294426 A

TITLE: Electrorheological fluid compositions

DATE-ISSUED: March 15, 1994

US-CL-CURRENT: 423/335; 252/573 ; 252/75 ; 252/78.3

APPL-NO: 07/ 733544

DATE FILED: July 22, 1991

| FOREIGN-APPL-PRIORITY-DATA: | | |
|-----------------------------|----------|----------------|
| COUNTRY | APPL-NO | APPL-DATE |
| JP | 2-203831 | August 2, 1990 |

----- KWIC -----

Abstract Text - ABTX:

Electrorheological fluid compositions of this invention are dispersions in an electrically insulating medium of 10 to 50% by volume of spherical silica particles prepared by hydrolyzing a silicon alkoxide of the general formula $\text{Si(OR)}_{\text{sub.4}}$ in which R is an alkyl group in the presence of an alkali catalyst and drying at or below 500.degree. C., show excellent fluidity in the absence of an applied voltage, vary reversibly to the state of high viscosity or even to the state of gel on application of a voltage, and have good storage stability.

Brief Summary Text - BSTX:

There is no specific limitation to the electrically insulating media to be used in this invention as long as they are electrically

insulating high-boiling substances and their examples are petroleum-derived lubricants, transformer oils, silicone oils, dibutyl sebacate, chlorinated paraffins, alkyl bromides, aromatic polycarboxylic acid alkyl esters, aromatic polycarboxylic acid halophenylalkyl esters, halophenyl alkyl ethers, and fluorine-containing oils.

Detailed Description Text - DETX:

The preparation of electrorheological fluid compositions was tried using commercial silica gel (product of Kanto Chemical Co., Inc. for chromatographic use). This material was observed in thermogravimetric analysis to lose 2.4% of its weight with an endotherm up to 200.degree. C. and 3.5% of its weight above 200.degree. C.

US-PAT-NO: 4988795
DOCUMENT-IDENTIFIER: US 4988795 A

TITLE: Amphiphilic polyimide precursor and process for
preparing the same from
fatty-substituted polyamide-acids

DATE-ISSUED: January 29, 1991

US-CL-CURRENT: 528/353; 428/473.5 ; 525/436 ; 528/125 ;
528/128 ; 528/172
; 528/188 ; 528/220 ; 528/229 ; 528/26 ; 528/352
DISCLAIMER DATE: 20060418

APPL-NO: 07/ 404020

DATE FILED: September 7, 1989

PARENT-CASE:

This application is a divisional of application Ser. No.
07/213,202 filed
6-29-88, now U.S. Pat. No. 4,897,461.

| FOREIGN-APPL-PRIORITY-DATA: | | |
|-----------------------------|-----------|---------------|
| COUNTRY | APPL-NO | APPL-DATE |
| JP | 60-157354 | July 16, 1985 |

----- KWIC -----

Detailed Description Text - DETX:

Further, thin films obtained by partial conversion into
polyimide under mild
conditions rather than complete conversion also have a good
heat resistance of
more than 200.degree. C. and excellent chemical
resistance, mechanical
strength and electric insulating properties. The partially
converted films are
of course very thin films with a thickness of not more than
10,000 .ANG., and

it is possible to provide films having a thickness, e.g. 5,000 .ANG., 2,000 .ANG. or 10 to 1,000 .ANG.. Although the partially converted films are inferior in heat resistance to the complete polyimide films, but the electric insulation and dielectric characteristics thereof are rather superior to the complete polyimide films because the long chain alkyl groups remain.

Detailed Description Text - DETX:

IR absorption analysis, thermal analysis (TGA and DTA), and measurement of molecular weight by gel permeation chromatography (GPC) were made, and it was confirmed that the product was the objective polyimide precursor.

US-PAT-NO: 4549034

DOCUMENT-IDENTIFIER: US 4549034 A

TITLE: Refined electrical insulating oil and oil-filled electrical appliances

DATE-ISSUED: October 22, 1985

US-CL-CURRENT: 174/17LF; 174/25C ; 252/570 ; 336/94 ;
361/315 ; 585/6.3
; 585/6.6

APPL-NO: 06/ 588654

DATE FILED: March 12, 1984

| COUNTRY | FOREIGN-APPL-PRIORITY-DATA: APPL-NO | APPL-DATE |
|------------|--|--------------|
| JP 1983 | 58-250736 | December 30, |

----- KWIC -----

Brief Summary Text - BSTX:

According to the present invention, the electrical insulating oil is prepared by refining a specific mixture with a solid acidic substance. The specific mixture comprises 1 to 70% by weight of at least one bicyclic monoolefin selected from the group consisting of unsaturated dimers or unsaturated codimers of styrenes such as styrene, .alpha.-methylstyrene and their monomethyl nuclear substituted compounds, and the remainder of alkyl (including cycloalkyl) biphenyl and/or alkyl (including cycloalkyl) naphthalene.

Brief Summary Text - BSTX:

The alkyl group in the alkylbiphenyl is exemplified by methyl, ethyl, propyl, isopropyl, n-butyl, sec-butyl, tert-butyl, isobutyl and amyl groups, and cycloalkyl group such as cyclohexyl group. A plurality of the alkyl groups can exist in a compound, however, the total number of carbon atoms in the alkyl groups is preferably in the range of 1 to 10. These alkylbiphenyls can be employed singly or in a mixture of two or more kinds. As preferable components for use in preparing the electrical insulating oil of the invention, the alkylbiphenyls have viscosities of not higher than 30 cSt (3.times.10.sup.-5 m.sup.2 /s) and preferably not higher than 10 cSt (10.sup.-5 m.sup.2 /s) at 40.degree. C. One of the most preferable compounds is monoisopropylbiphenyl.

Detailed Description Text - DETX:

With regard to the sample oils except Examples 1 and 8 (consisting of sole alkylbiphenyl or alkylnaphthalene), the change of bicyclic monoolefins in oil mixtures after clay treatment was examined by gas chromatography. The results of this test are shown in the following Table 2.

Claims Text - CLTX:

1. A refined electrical insulating oil which is prepared by refining a mixture using a solid acidic substance, said mixture comprising 1 to 70% by weight of at least one bicyclic monoolefin selected from the group consisting of unsaturated dimers or unsaturated codimers of styrenes such as styrene, .alpha.-methylstyrene and their monomethyl nuclear substituted compounds and the remainder of alkyl (including cycloalkyl) biphenyl and/or alkyl (including cycloalkyl) naphthalene.

Claims Text - CLTX:

4. An oil-filled electrical appliance which is impregnated with an electrical insulating oil which oil is prepared by refining a mixture using a solid acidic substance, said mixture comprising 1 to 70% by weight of at least one bicyclic monoolefin selected from the group consisting of unsaturated dimers or unsaturated codimers of styrenes such as styrene, .alpha.-methylstyrene and their monomethyl nuclear substituted compounds and the remainder of alkyl (including cycloalkyl) biphenyl and/or alkyl (including cycloalkyl) naphthalene.